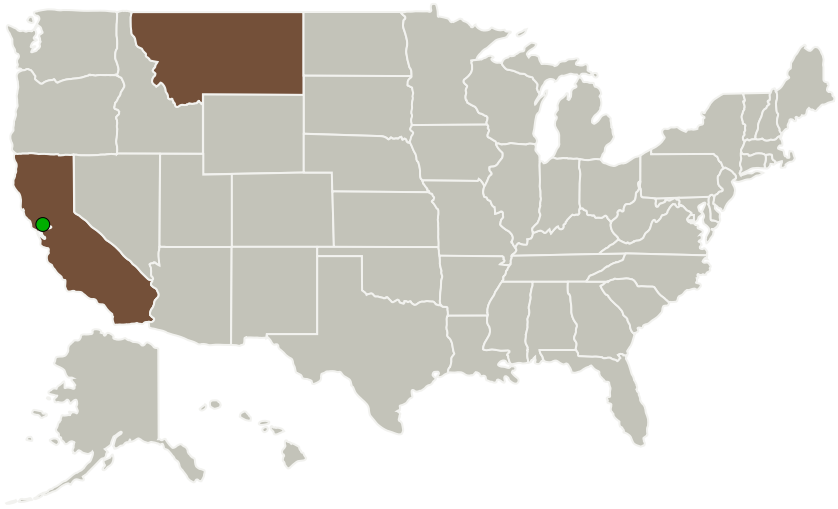
Predictive Situational Awareness Tool, Phase I

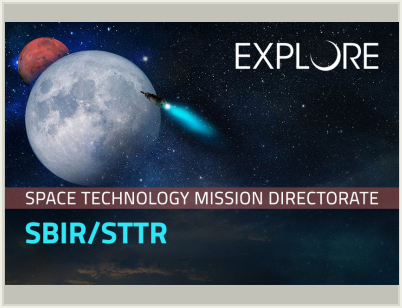
Completed Technology Project (2011 - 2011)

Project Introduction

Situational Awareness is the key element of performing safe and effective operations, and the space vehicle operations carried out by NASA is by no means an exception to the rule. Astronauts and flight controllers need to maintain awareness of the situation in the space vehicles, robots, habitats, Mission Control Center, and other systems. NASA has devoted and continues to devote a significant amount of resources to software for displaying the current situation in order to maintain this awareness. However, astronauts and flight controllers need to predict the future state of the systems for themselves. What will happen next? Resources have now advanced to the point where it is possible to inform the astronauts and flight controllers of the expected situation in the near future, and also to warn them if the current situation does not match the expectations of the recent past—this will indicate a developing issue that requires attention. All of this will aid in reducing the cognitive load on the astronauts and flight controllers, and help them perform their work safely and effectively. S&K Aerospace, LLC (SKA) proposes to research and develop a system that will provide predictive situational awareness to flight controllers and astronauts, by bringing together information about the current state of the vehicles and other systems, the activities planned in the near future, and the expected state of the system in the future, as well as an indication if the current state of the system matches planned state. This system will be called the Predictive System Awareness Tool, or PSAT.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
S&K Aerospace, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	St Ignatius, Montana
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	Montana

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138425)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

S&K Aerospace, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Arthur Molin

Co-Investigator:

Arthur Molin

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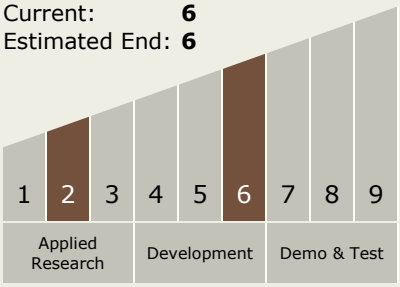
Technology Maturity (TRL)

Start: **2**
Current: **6**
Estimated End: **6**



Technology Areas

Primary:

- TX04 Robotic Systems
  - TX04.4 Human-Robot Interaction
    - TX04.4.1 Multi-Modal and Proximate Interaction

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System